REMARKS

Applicants have now had an opportunity to carefully consider the Examiner's comments set forth in the Office Action of January 24, 2005.

Reconsideration of the Application is requested.

The Office Action

The drawings filed on October 1, 2001 stand as accepted by the Examiner.

Claims 1-11, 13, 15-16, and 36-41 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,465,307 issued to Azumaya et al. (Azumaya).

Claim 14 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Azumaya in view of U.S. Patent No. 5,047,955 issued to Shope et al. (Shope).

Claims 12, 17-20, 22-27, and 29-35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Azumaya in view of U.S. Patent No. 5,978,791 issued to Farber et al. (Farber).

Claims 21 and 28 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Azumaya in view of Farber as applied to claims 17 and 25, and further in view of U.S. Patent No. 5,790,133 issued to Holcomb et al. (Holcomb).

The Art Rejections

With reference to the rejection of claims 1-11, 13, 15-16, and 36-41 as being anticipated Azumaya, Applicants wish to point out that Azumaya's teachings are specifically utilized in an image-editing workstation to modify a predefined region of a document. The region-of-interest (ROI) can either be selected by enclosing it with a hand-drawn marker (of a certain predefined color hue and texture/density) or by drawing a dot via a control panel designation to enclose a rectangular area of predetermined size (column 9, lines 47-54). However, in the present application, none of the image area, the marker characteristics, or the ROI is established beforehand but instead is processed in real time in an automated, auto-windowing fashion as recited in claim 1, as amended(page 5, line 32 – page 6, line 3). For example, there may be several irregularly-shaped photographs or image-objects on one document, as recited in amended claim 14, that are located in various regions of the page as shown in FIG. 1. Embodiments of the present application automatically find these regions without apriori assistance from the user.

Further, according to the present application, the ROI is recognized and based upon pixel image status tags determined by the characteristics of the corresponding portion of the image, e.g., "background-white" or "non-white," that are generated automatically as recited in claim 13, as amended (see, e.g., page 6, lines 9-16). In Azumaya, the region of interest is generated at even marker crossings, and discontinued at odd crossings (column 15, lines 24-29). Knowledge of common and multiple area identification regions are known beforehand, since there is a single (or at the very least, limited) number of markers used to identify regions of interest for subsequent processing needs (i.e., color editing and/or blanking). Since the ROI after each marker crossing is known to be a common area, there is no reason to establish a region ID-equivalence procedure to enable subsequent image-statistics merging and/or common area processing.

Since the fast & slow-scan edge (marker) boundary conditions are established beforehand, the characteristics of common line-segments referenced in Azumaya can be classified (tagged) using only a few pixel status bits (column 15, lines 8-14) as shown in Table 1 (column 15, lines 30-41). Once again, these are used to decide whether or not a pixel or group of pixels (line-segments) are common. Further, Azumaya employs a bidirectional raster-scanning technique, in combination with an X and Y coordinate space, in order to establish the pixel status or edge characteristics (see column 15, lines 42-67 and columns 16 - 31).

On the other hand, in the present application, run-lengths of current and past line segments of common white and non-white pixel regions are temporarily stored during the Line-Segment Identifier scanlines with the ID equivalence (i.e., common region processing step) and updated in the subsequent "Update ID Equivalence Table" scanline (FIG. 11B of the present application) as recited in claims 39-41, as amended. In the present application, the processing is unidirectional (see page 23, lines 17-24) during the update stage, and unlike Azumaya, there is no need to process the same scanline twice.

Furthermore, Azumaya employs fast and slow-scan status identification sub-sampling in order to reduce real-time memory storage as well as provide enlargement/reduction magnification (column 12, lines 53-55). This processing requires parallel-to-serial and serial-to-parallel converting modules (column 8, lines 24-34; column 13, lines 54-67; column 14, lines 1-12; FIG. 8; and FIG. 21) in order to re-establish the desired output image resolution and dimensions. In the present

application, however, the image is sampled at the full-resolution in the fast-scan direction (and sub-sampled in the slow-scan direction by 1/2 by duplicating/maintaining the previous run-length information in memory during the "Update ID Equivalence Table" step), thereby allowing a higher effective (area/edge recognition) resolution. Furthermore, embodiments of the present application use the window-mask bit, in conjunction with the ID retagging table, to retag and alter only those regions desired during the second-pass retagging process. As mentioned above, Azumaya uses sub-sampled X and Y coordinate information to alter the image only at those areas contained within the markers.

Independent claims 1 and 36 have each been amended herein to further clarify, and claim, the unidirectional nature of the processing according to the present application, as described above and for which support is found on page 23, lines 17-24. Each of the subject claims has been also amended to further clarify the two-pass nature of concepts of the present application. Also, claim 2 has been amended to include more appropriate language with regard to the amendments made to claim 1. Claims 3 and 4 have been amended only to correct an inadvertent dependency error. Claims 37-41 have been amended to include more appropriate language with regard to the amendments made to claim 36.

Further, claim 40 has been amended to include a limitation specifying that the base identifier search is performed either during an inter-scanline delay time or during alternate scan lines. Support for this amendment may be found on page 12, lines 1-17, and in FIGS. 11A and 11B. Claim 41 has also been amended to include a limitation specifying that the processing of the identifier equivalence table occurs during an interdocument delay period. Support for this limitation may be found on page 15, lines 22-26, and FIG. 5.

For the reasons cited above, it is respectfully submitted that independent claims 1 and 36, as amended, are patentably distinct over the cited reference and in condition for allowance. Claims 2-11, 13, and 15-16, as amended, depending from claim 1, and claims 37-41, as amended, depending from claim 36 should, likewise, be in condition for allowance.

With reference now to the rejection of claim 14 as being unpatentable over Azumaya in view of Shope, claim 14, depending from independent claim 1, as amended, should also be in condition for allowance.

With reference to the rejection of claims 12, 17-20, 22-27, and 29-35 as being

unpatentable over Azumaya in view of Farber, Farber discloses a data processing system that allocates unique identifiers for pre-existing data files in order to eliminate duplicate copies (Abstract, column 3, lines 29-35, and column 28, lines 23-26). From a user standpoint, this would be transparent such that two identically named files could seemingly be contained in two separate directories but in reality, there's only one copy that contains the true informational content. The other copy points to the true file essentially via a link-list paradigm.

The present application distinguishes in this regard since the regional connection matrix is developed in real time as the document is being processed. Once it has been established that one image-region connects to another region (as illustrated in FIGS. 7A-7F, and FIGS. 8-10 of the present application), the IDs are immediately set equal to each other via the ID equivalence table (during the Line-Segment Identifier Allocation scanline time, as shown in FIG. 11B). The base-ID search is performed during every-other scanline in order to reconcile any IDs that may point to any other ID in an infinite-loop fashion (during the Update ID Equivalence Table scanline time, as depicted in FIG. 11B), thereby avoiding a break in the overall page connection matrix at the completion of the auto-windowing process.

If this base ID search is not performed and reconciled in during processing, there is a high probability that some regions of a window may be processed differently from a common region or area of the same window (depending upon the topography of the window of interest), which would render an unacceptable imaging artifact during the final retagging stage. For example, there may be a time where the ID equivalence memory/table may consist of an ID/memory-address of "2" that "points" to an ID of "5" (i.e. memory address "2" will contain a "5") and likewise, the ID/memory-address of "5" that "points" back to "2" (i.e. memory address "5" will contain a "2"). In this case, the hardware circuitry senses this infinite-loop condition and forces one ID to be the "base" ID (i.e. for example, it may alter the contents contained at address "2" to a value of "2", thus forcing the ID of "2" to the base-ID), thereby eliminating the possibility of a break in the overall regional connection matrix.

Applicants respectfully note that the algorithm of the present application is different relative to the true spirit of Farber's patent, of which the main concern is to reduce the duplication of the same document/file that may be stored at various

locations within a directory structure of a certain operating system. It has no relation to the way in which the ID's are managed embodiments of the present application.

Like Independent claims 1 and 36, each of independent claims 17, 25, and 30 has been amended herein to further clarify, and claim, the unidirectional nature of the processing according to the present application, as described above and for which support is found on page 23, lines 17-24. The subject claims have also been amended to further clarify the two-pass nature of concepts of the present application.

For the reasons cited above, it is respectfully submitted that independent claims 17, 25, and 30, as amended, are patentably distinct over the cited references and in condition for allowance. It is therefore also submitted that claim 12, depending from independent claim 1, claims 18-24, depending from independent claim 17, claims 26-29, depending from claim 25, and claims 31-35, depending from claim 30, are also now in condition for allowance.

With reference to the rejection of claims 21 and 28 as being unpatentable over Azumaya in view of Farber, and further in view of Holcomb, these claims depend respectively from independent claims 17 and 25 and should be in condition for allowance as described above.

Claims 1-41 remain in this application.

CONCLUSION

For the reasons detailed above, it is submitted all claims remaining in the application (Claims 1-41) are now in condition for allowance. The foregoing comments do not require unnecessary additional search or examination.

No additional fee is believed to be required for this Amendment A. However, the undersigned attorney of record hereby authorizes the charging of any necessary fees, other than the issue fee, to Xerox Deposit Account No. 24-0037.

In the event the Examiner considers personal contact advantageous to the disposition of this case, he/she is hereby authorized to call Mark Svat, at Telephone Number (216) 861-5582.

Respectfully submitted,

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Ap. 25th 2005
Date

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